Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of	)	
Digital Audio Broadcasting	)	MM Docket No. 99-325
Systems and Their Impact on the	)	
Terrestrial Radio Broadcast	)	
Service	)	

To: The Commission

COMMENTS OF GREATER MEDIA, INC.

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SUMMARY

Greater Media, Inc. (Greater Media) hereby files its comments in response to the Commission's Notice of Proposed Rule Making (Notice) respecting implementation of digital audio broadcasting (DAB). Greater Media strongly supports the effort to develop an in-band on-channel (IBOC) DAB system and urges the Commission the provide every opportunity to enable successful deployment of IBOC DAB. The Commission should seriously consider new spectrum models for DAB implementation only if none of the proponent IBOC DAB systems is found by the National Radio Systems Committee (NRSC) to produce a robust, "near CD" quality service with coverage areas equal to or greater than current analog FM and AM services. It should also adopt a single DAB transmission standard, which is essential to successful implementation of DAB, and should permit broadcasters to retain their existing signal bandwidth to allow complete development of DAB, including the ability to offer new and enhanced services.

Greater Media generally supports the Commission's ten proposed selection criteria, which largely mirror those previously adopted by the NRSC. Indeed, the Commission in making its determinations should rely extensively on the findings of the NRSC, a representative body which has devoted enormous time and resources to DAB study and possesses the expertise to make appropriate recommendations to the Commission.

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Greater Media, Inc. ("Greater Media"), through its attorneys and pursuant to Section 1.415 of the rules, hereby files its comments in response to the Commission's Notice of Proposed Rule Making ("Notice") in the above-referenced docket inviting comment on its proposal to implement digital audio broadcasting (DAB). In support thereof, the following is shown:

I. Introduction

1. Greater Media has been a broadcast licensee for over thirty years, operating both AM and FM stations in communities large and small in many areas of the United States. Today Greater Media, individually or through various subsidiaries, is the licensee of stations in markets throughout the country, including Boston, Massachusetts, Philadelphia, Pennsylvania, Detroit, Michigan and New Brunswick, New Jersey. As a longtime licensee, Greater Media has participated extensively in Commission proceedings over the years looking toward amendment of the

technical rules which are critical to maximizing high-fidelity interference-free broadcasting service to the public. Greater Media in particular has actively participated in the instant proceeding, filing extensive comments in response to the Commission's Public Notice[1] requesting comment on the Petition for Rule Making filed by USA Digital Radio Partners, L.P. (USADR) respecting implementation of an in-band on-channel (IBOC) DAB system. Further, Greater Media has actively participated in industry forums since the concept of DAB was initially introduced in the United States with the showcasing of the European Eureka 147 DAB system in the early 1990s. In fact, Grater Media was one of the original U.S. broadcaster representatives which visited France to learn more of the Eureka system. More recently, Greater Media has participated in virtually all National Radio Systems Committee (NRSC) DAB activities as a member of NRSC's DAB subcommittee and various working groups. Greater Media personnel assisted in the development of the first round of IBOC DAB laboratory and field test procedures and were active in the laboratory test program.[2] Greater Media's Vice President of Radio Engineering continues to serve both as chairman of the NRSC's DAB subcommittee and as a member of several of its working groups. As a result of these

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[1]Public Notice, DA 98-2244, released November 6, 1998.

[2]Indeed, Greater Media was the only broadcast company that actually contributed funds to the establishment and operation of the DAB test laboratory.

activities, Greater Media has acquired an intimate knowledge of the problems and promise of DAB generally and IBOC DAB in particular.

2. The Commission's Notice, while entirely appropriate in the context of the current transition of technology in nearly all forms of electronic media from analog to digital formats, unfortunately comes several months too early to allow commenters to base their comments regarding IBOC on hard data regarding current levels of system performance. While most broadcasters, including Greater Media, are firmly convinced that a workable, robust IBOC system is the obvious vehicle with which to transition radio to a digital transmission scheme, the results of the first round of system evaluations by the NRSC will not be known for at least another 45-60 days. Indeed, the only submission received to date by the NRSC is that of USADR. The remaining proponent, Lucent Digital Radio, did not meet the NRSC's December 15, 1999 submission date and has subsequently indicated that will tender its submission to the NRSC simultaneously with the filing of its comments in response to the Commission's Notice.

3. An initial examination of the data submitted by USADR points to marked improvement in the viability of its IBOC system as compared to the systems evaluated by the NRSC and the EIA several years ago. However, the key question to be answered by the NRSC's evaluation of that data is whether an IBOC system offers significant advantages over today's analog systems - advantages in fidelity, robustness, immunity from interference, data overhead and the like. Perhaps more important is whether the IBOC system can

coexist on a noninterference basis with the current analog system during the necessary transition period. Compatibility was a significant challenge with the earlier systems. Much of the test material, particularly the audio cuts, necessary to allow the formulation of an opinion as to system efficacy is not widely available. Thus, the report of the NRSC's evaluation of system viability is essential to the industry's ability to formulate opinions as to the ultimate utility of the technology. The NRSC decided early on that if an IBOC system could not be demonstrated to be superior to today's analog system, then it should not be seriously considered as the platform upon which to transition the U.S. radio industry to a digital future. With this significant limitation in mind, Greater Media offers its comments on the specific questions posed in the Commission's Notice.

II. Tentative Selection Criteria

4. Greater Media generally supports the Commission's ten proposed selection criteria (Notice, para. 20-35). These criteria largely mirror those previously adopted by the NRSC. In this regard, it should be noted that the NRSC has formulated detailed test procedures derived from the long experience of a number of its members in the testing of digital audio and video systems. These test procedures generally speak directly to the Commission's proposed criteria. At its January 2000 meeting at the Consumer Electronic Show in Las Vegas, the DAB subcommittee voted overwhelmingly to enter into a "standard setting" mode provided one or more of the IBOC systems cleared the initial "better than

analog" hurdle. It is anticipated that such a "standard setting" activity would involve independent laboratory testing of each system and the eventual generation of a report containing the test results. Any desired system comparisons could be readily made from an analysis of this test data.

The Commission has expressed concern (Notice, paras. 21-22) as to the robustness of IBOC systems during the necessary transition period during which both analog and digital systems would operate simultaneously. It is anticipated that this transition period could be lengthy, given the existing receiver universe of over 750 million sets and the need to avoid significantly disadvantaging users of the embedded receiver base. An initial examination of USADR's admittedly limited data indicates that the IBOC digital signal provides nearly seamless coverage to the entire normally protected analog service area of FM stations and to roughly the 2 mV/m service area of AM stations. Based on this data, it does not seem that listeners will be subject to "lesser digital performance" during the transition period. Indeed, the robustness of the service appears to be superior to analog performance, and this level of service will dramatically improve once the transition period is complete and digital power levels are increased by approximately 10 dB.

5. In any event, the compatibility of a system operating in the "hybrid" mode is of paramount importance, while the higher power, "all digital," mode does not present meaningful compatibility concerns. It is unlikely that any broadcaster would

choose to transition to "all digital" until the percentage of listeners utilizing digital receivers is very nearly 100%. As noted in the preceding paragraph, digital robustness, even at hybrid mode power levels, appears to be excellent and thus operating in the hybrid mode poses few disadvantages. When and if the analog service is discontinued, then digital/analog compatibility will cease to be an issue.

6. With respect to possible protection of a Low Power FM LPFM) service (Notice, para. 25), Greater Media is on record as strongly opposing any LPFM service that is predicated upon any relaxation of current protection standards for any class of station. It must be stressed that the development of a viable IBOC system is based entirely on the presumption that existing allocation standards will be maintained. Although only the developers can address in detail the system performance compromises that would likely be occasioned by the lessening of current adjacent channel protection standards, fundamental engineering principles make it obvious that further "band packing" can only worsen the interference environment for any service, digital or analog.

7. In a related vein, the Commission suggests (Notice, para. 27) that today's receivers are much improved over those of years past in their ability to reject adjacent channel interference, perhaps paving the way for more intensive utilization of the spectrum. Detailed studies conducted by both the NAB and CEA show conclusively that this is clearly not the case - if anything

receiver performance in non-automotive receivers has deteriorated slightly and the number of non-automotive receivers has increased substantially as a percentage of the entire receiver universe. Greater Media believes that it is unrealistic to base any more intensive use of the AM or FM spectrum on the premise that 'better' receivers are present in increased numbers. Further, increasing the selectivity of AM and FM receivers, while potentially improving adjacent channel rejection, actually results in demonstrably diminished audio performance. In AM, this manifests itself as decreased audio frequency response, which is already typically an abysmal 100-2500 Hz. In FM, narrower IFs typically result in higher levels of audio distortion, particularly at the higher audio frequencies. Even some of today's "narrower" auto radios exhibit more than 10% total harmonic distortion at frequencies above 5 kHz. In short, the Commission should not premise its decisions based upon assumptions of incremental (let alone exponential) improvements in receiver selectivity.

8. The hybrid mode of IBOC is adequate to produce a "close to CD" stereo audio experience. Compression rates of roughly 15:1 are required to reduce the source material bit rate to a value that can be transmitted within the bandwidth and interference constraints of the existing channels. Data overhead during the hybrid operating period will be relatively small; most of the available bits are needed for the main channel program. It is also clear that tomorrow's audio experience, as evidenced by the audio capabilities of HDTV and soon, DVD, may widely encompass 5.1 sound,

with its attendant requirements for more bandwidth to transmit the addition audio channels. Allowing broadcasters the flexibility to utilize the additional "bits" that will become available with the transition to the all digital mode along with the ability to refarm that portion of the station's occupied bandwidth now devoted to analog transmission will assure that IBOC has the ability to "permit the flexible and dynamic development of new broadcast and nonbroadcast service" (Notice, para. 29). The reclaimed analog bandwidth could be used for 5.1 channel sound, for data and/or multimedia transmission or for other "new and innovative ancillary services" (Notice, para. 30).

9. Under these circumstances, the differences in the allocation of spectral signal components in the USADR and the Lucent systems are not really pertinent. What is important is that broadcasters be given the ability to retain their existing signal bandwidth, as defined by the current emission mask. Only through retention of this bandwidth will it be possible for free, over-the-air radio to develop and transmit the types of advanced program and data services to the public that obviously will be necessary to remain competitive and viable in the future. To constrain radio to two-channel sound and very limited data transmission rates is to relegate it to the status of a second-rate information distribution service in the very near term. The ability to offer new and enhanced services also satisfies the Commission's concerns as to "extensibility" (Notice, para. 31).

10. Greater Media agrees with the Commission (Notice, para. 32) that all existing broadcasters should have the opportunity to initiate digital service to the maximum extent possible. In this regard, it is particularly encouraging to see that today's AM broadcasters may well have the opportunity to explore multiple format possibilities that have been effectively foreclosed to them in the recent past because of fidelity and interference concerns. This is very much in the public interest.

11. Greater Media also supports the Commission's suggested coverage model (Notice, para. 33). Based on an early analysis of the USADR material submitted to the NRSC, it appears that there will be solid digital service provided to virtually all areas within the currently protected analog service contours and very listenable digital service provided to some areas outside of the officially protected contours, depending upon the local interference situation. This circumstance is analogous to the reality of today's analog service and has the desirable effect of maintining the status quo.

III. IBOC DAB Model

12. IBOC clearly represents the most effective and efficient and least disruptive method of transitioning the U.S. radio industry to a digital transmission platform, provided that one or more IBOC proponent systems are found to offer a robust transmission format with service areas equivalent to existing AM and FM services areas. Both stations and listeners can readily transition to a digital service in a time frame that makes

technical and economic sense. No analog listener will be disenfranchised by the initiation of digital transmissions by any station. Those listeners that do choose to embrace the digital service at an early date will be able to enjoy all of its inherent advantages while the "heritage" analog listener will be assured of continued service for the duration of what can be a very flexible transition period.

13. Greater Media supports the Commission's tentative conclusion (Notice, para. 37) that IBOC DAB licenses should not exist as distinct authorizations for purposes of local radio ownership restrictions. In point of fact, when the transition to a digital service is complete, it is anticipated that the underlying analog facilities will be shut down, leaving the station licensee with exactly the number of individual "stations" as were controlled by it prior to the initiation of hybrid IBOC service.[3]

14. As previously noted, Greater Media strongly urges the Commission to permit station to retain any and all bandwidth currently available under the existing FM emission "mask". Only through retention of this bandwidth can stations have the opportunity to offer both enhanced audio services (such as 5.1 channel sound) and data services at a bit rate that would be considered anything other than "minimal". If radio is going to remain a viable and valuable service to the American public it must have the flexibility and adaptability to respond dynamically to the

[3]Such treatment of IBOC DAB operations would parallel the Commission's treatment of digital TV broadcast operations for the purposes of the multiple ownership rules.

rapidly changing needs and expectations of its listeners. The ability to provide only a highly compressed stereo audio service with the attendant availability of only minimal data overhead clearly is not a model which would meet those needs and expectations.

IV. Alternative DAB Model Using New Spectrum

15. The Commission should seriously consider new spectrum models for DAB implementation only in the event that none of the proponent IBOC DAB systems is found by the NRSC to produce a robust, "near CD" quality service with coverage areas equal to or greater than current analog coverage areas in a manner compatible with the existing analog FM and AM services. The ease of transition, spectral efficiency and the lack of disruption to existing service clearly point to the desirability of an IBOC solution. In any event, the potential reallocation of TV channel 6 would not provide a workable transition scenario. Rather, in order to avoid extreme service disruptions, extended delays and consumer confusion, an allocation of new spectrum that would accommodate all existing stations would be essential if IBOC DAB proves infeasible. As a practical matter, TV channel 6 could accommodate only a small fraction of existing licensees. Further, as the Commission points out (Notice, para. 43), having a deadline date on which all current FM band stations would suddenly be forced to transition to an all digital transmission scheme simply does not fit with the reality of radio listeners gradually transitioning

from analog receivers to digital in the normal course of radio set replacement and would be highly disruptive.

16. It is also nearly certain that most, if not all, TV channel 6 licensees will have a strong preference to ultimately transition their digital facilities to the VHF channel. Although this process is subject to Commission review and approval, if the majority of other DTV broadcasters choose to ultimately migrate back to their VHF channels, it would appear desirable that the current analog occupants of TV channel 6 should also be given that opportunity.

17. In the event a new spectrum solution is required, Greater Media believes that reallocation of a sufficient segment of UHF spectrum, perhaps as much as 30 or 40 MHz, to broadcast radio would be the appropriate course of action. Such an allocation would permit enough digital carriers to accommodate virtually all existing AM and FM stations on a SCPC (single channel per carrier) basis. As evidenced by earlier tests of the "in band-adjacent channel" DAB system proposed by AT&T, such a relative narrow band SCPC digital-only system is extremely robust, replicating current station service areas at power levels well below those currently utilized for analog transmission. Such a system could be allocated with multiple classes of stations with no Eureka 147-like geographical restrictions on transmitter siting, thus allowing virtual replication of the service areas of existing analog facilities. The technical parameters of such a system could be defined as necessary to provide the necessary data rates to provide

audio service of the desired quality and a data throughput in the desired quantity.

18. In the unlikely event that no IBOC proponent system is deemed to be suitable for use in the United States, thus requiring consideration of a new spectrum solution, Greater Media believes that use of the Commission's DTV assignment model would be equally appropriate here. Each existing AM or FM station would be given the opportunity to establish a digital outlet in the new spectrum. At such time as the transition of stations and listeners to the digital platform is complete, then the licensees would "give back" their analog spectrum for refarming. Of course, the transition to a digital transmission scheme using a new spectrum model will almost certainly result in a considerably longer, more difficult transition period than would be the case if an IBOC system is adopted. Every IBOC option should be carefully investigated before further consideration is given to a new spectrum approach.

V. Standards and Testing and Decision Making Models for DAB Systems

19. Greater Media strongly supports the concept of a single DAB transmission standard as did most of the earlier commenters in this proceeding. The single-standard approach has the broad support of the radio industry, including the DAB proponents and the trade organizations (NAB and CEA) which have taken active roles at earlier stages of this proceeding. A single standard is absolutely essential to give all parties - broadcasters, receiver manufacturers and consumers - the confidence and certainly to proceed with their transition strategies to a digital radio

platform. Greater Media strenuously opposes a possible "open architecture" solution (Notice, para. 52). Such an approach, which was adopted with disastrous consequences in the case of AM stereo, can only delay the transition process at best and derail it entirely at worst.

20. It its most recent meeting (January 8, 2000 at the Consumer Electronics Show In Las Vegas), the DAB Subcommittee of the NRSC voted to enter into a standard-setting effort in the event that one or more of the IBOC proponent systems was found to clear the initial "better than analog" performance hurdle. This subcommittee's membership consists of representation by every active IBOC proponent, major broadcast groups, representatives of the consumer electronics industry and other knowledgeable industry experts and consultants. Its work is jointly sponsored by the NAB and the CEA. Clearly this body includes appropriately representative membership possessing the necessary knowledge and experience to examine each proponent system carefully and impartially and to make a recommendation to the Commission, if appropriate, for a U.S. IBOC DAB standard. Greater Media urges the Commission to endorse formally the work of this subcommittee and likewise formally direct this group to recommend to the Commission a U.S. IBOC DAB standard.

21. In the latter regard, Greater Media observes that, at various times during the life of the current NRSC DAB Subcommittee, DAB system proponents have taken exception to various actions proposed by a majority of the membership and have stated that they

would be forced to take their systems directly to the FCC for its ultimate determination unless their concerns were suitably addressed. These actions potentially undermine what has been a long and expensive, yet necessary, process. To avoid such unproductive threats in the future, it is important that the Commission formally look to the NRSC DAB subcommittee for a recommendation on IBOC DAB and, further, encourage the proponents to work within the subcommittee process rather than seek outside intervention when dealing with a contentious issue. Such Commission action will positively focus the efforts of the proponents and the subcommittee members alike and contribute significantly to the expeditious evaluation of systems.

22. Ultimately, of course, the Commission will make the final determination as to whether there is to be a U.S. DAB standard and, if so, which system or systems may be appropriate for inclusion in such a standard. Proponents with any residual concerns would certainly be free at that point to approach the Commission with those concerns, and the Commission notably has already stated in the Notice that "we will act promptly to provide an alternative mechanism if subsequent events undermine our confidence in the current testing process. . . ." (Notice, para. 58). At the same time, Greater Media urges the Commission to clarify that its potential establishment of an alternative mechanism would be undertaken only as a measure of last resort and to encourage the proponents to work within the NRSC process.

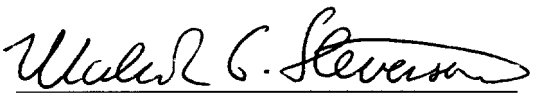
VI. Conclusion

23. Greater Media strongly supports the IBOC DAB solution for the U.S. Radio industry. It urges the Commission to focus primarily on this option unless it is ultimately found that no IBOC proponent system proves to be technically suitable for such use. It likewise encourages the Commission to actively support the efforts of the NRSC in its ongoing evaluation efforts and to look to the NRSC for a formal recommendation as to which of the several proponent systems may be appropriate for consideration as a U.S. standard for digital audio broadcasting.

WHEREFORE, for the foregoing reasons, Greater Media respectfully urges the Commission to adopt rules regarding implementation of a U.S. DAB system consistent with the views expressed herein.

Respectfully submitted,

SCHWARTZ, WOODS & MILLER

By: 
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